TO COMPARE THE EFFECTS OF THERABAND EXERCISE AND PLYOMETRIC EXERCISE ON THROWING VELOCITY AMONG COLLEGIATIVE CRICKET PLAYERS

DISSERTATION

Submitted for the partial fulfillment of the requirement for the degree of

MASTER OF PHYSIOTHERAPY(MPT)

(Elective - MPT SPORTS**)**

Done by

K.ARUNKUMAR

Bearing Registration No: 271550221

Submitted to:

THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY

CHENNAI–600032.

APRIL - 2017

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Date:

Place: Chennai

Seal&Signature of Principal

……

Prof. R.RADHAKRISHNAN,MPT.,PGDHM.,

Mohamed Sathak A.J College of Physiotherapy

MOHAMED SATHAK A.J COLLEGE OF PHYSIOTHERAPY

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Signature of Guide

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Prof. R.RADHAKRISHNAN,MPT.,PGDHM.,

Mohamed Sathak A.J College of Physiotherapy

CERTIFICATE

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…… ……

Internal Examiner External Examiner

Place:

Date:

DECLARATION BY THE CANDIDATE

I hereby declare that the Dissertation entitled "**TO COMPARE THE EFFECTS OF THERABAND EXERCISE AND PLYOMETRIC EXERCISE ON THROWING VELOCITY AMONG COLLEGIATIVE CRICKET PLAYERS**" was done by me for the partial fulfillment of the requirement of **Master of Physiotherapy** degree. The dissertation had been done under the direct supervision and guidance of my Guide at **Mohamed Sathak A.J college of Physiotherapy** ,Chennai, and submitted the same during the year April2017 to **The Tamilnadu Dr.M.G.RMedical University**.

Date

Place :Chennai

…….

Signature of the Candidate

ACKNOWLEDGEMENT

- I thank the **Almighty** for blessing me in all aspects to complete the project successfully.

- I thank Our **Management** for providing sufficient books, good faculties and facilitating us to explore and gain a wide knowledge.

- My sincere thanks to **our Respectable Alhaj E.S.M.A. Basheer ahmed,** and our director **JANABA** S.**MASUOOKA**

- I have great pleasure to express the deep sense of gratitude to our beloved Principal **PROF.R.RADHAKRISHNAN MPT**, for his valuable advice and encouragement.

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- It is my privilege to render my heartfelt thanks to teaching and non-teaching staffs.

TABLE OF CONTENTS

ABSTRACT

ABSTRACT

Objective: The cricket player and basketball player to strengthen shoulder muscles an improving the throwing velocity. The purpose of the study to evaluate the effectiveness of theraband exercise and plyometric exercise on throwing velocity among cricket players.

Methods: It is a experimental study which was conducted on twenty athletes it is divided group A and group B. Group A received theraband exercise and group B received plyometric exercise repetitions three times per day. Total duration of study 3 weeks. Both groups values were analyzed statistically the pre and post values or both groups were analyzed by using t test and pre post value were analyzed using ANOVA.

Result: Both groups showed improvement in strength , ROM and function. dependent T test was computed. The was a significant improvement in throwing velocity among cricket players. Through there was a reported improvement in throwing velocity statistical differences were consistant in our sample population

.

Conclusion: In this study theraband showed an significant effect on throwing velocity among cricket players as theraband exercise helps to strengthen the muscle and also gives quick stretch to a muscles which helps in increase in tension which helps in throwing velocity. This study was concludes that plyometric and theraband exercise improving throwing velocity on cricket players.

Key terms : Plyometric theraband throwing velocity

INTRODUCTION

INTRODUCTION

Throwing is a fundamental movement integral to numerous sporting activities. A throwing movement may occur along three planes of motion as illustrated in Cricket. They are: Cocking phase, Acceleration phase, Deceleration phase.

The total movement time of the throw is defined by the time at which the hip reached the maximal linear velocity (begin of the throw) and the time at which the ball released from the hand. With regard to the upper extremity the internal rotation of the shoulder, and elbow extension, are two important contributors to the total ball velocity at release.

Overhead throwing can cause muscle injuries around the shoulder if the muscle for throwing are weak.

Muscle strength is a broad term that refers to the ability of contractile tissue to produce tension and a resultant force based on the demands placed upon the muscle. More specifically, muscle strength is the greatest measurable force that can be exerted by a muscle or muscle group to overcome resistance during a single, maximum effort.

Muscle strength is an essential component to perform any type of ADL activities. Good muscle strength reduces the stress on joint and also maintains active life style. Many factors like injury, disease, immobilization, disuse or in activity result in impaired muscle weakness and muscle atrophy or deconditioning. In order to increase the muscle strength in physically active individuals or athletes or patients with loss of muscle strength or insufficient muscle strength to carry out basic activities of daily living require strengthening exercise.

In cricket players,throwing a ball is a major practice done which requires good muscle strength.

There are various ways of strengthening exercise for shoulder muscles.

Theraband exercise is a type of resistance exercise which is used to increase muscle strength and it also helps in throwing velocity by increasing the muscle strength.

Plyometric of stretch-shortening drills employs high velocity eccentric to concentric muscle loading, reflexive reaction and functional movement patterns. They are 3 phase in plyometric exercise:

They are: Eccentric phase, Amortization phase, Concentric phase

It is mainly incorporated in sports man to improve their performance by increasing the strength.

Hence the aim of the study is to find effect of plyometric exercise and theraband exercise on throwing velocity.

NEED FOR STUDY

NEED FOR STUDY

Numerous studies have been done to determine the effectiveness of theraband exercise to improve the throwing velocity.

Many studies have been done to find the effect of plyometric exercise and theraband exercise in rehabilitating athletes with Lower limb injuries.

But very few studies have done on upper limb. Specifically the effectiveness of theraband exercise on throwing.

Cricket is a common game played by college students and muscle injuries due to muscle weakness while throwing is common. So this study is done on throwing velocity among cricket players.

Many studies have been done to strengthen the shoulder muscles in cricket players and also to increase throwing velocity with plyometrics exercise but very few studies have done with theraband exercises.

The purpose of this study is to determine the effect of plyometric exercise and theraband exercise on throwing velocity.

AIMS AND OBJECTIVES

AIMS

To find out the effect of theraband exercise and plyometric exercise and throwing velocity among collegaitive cricket players.

OBJECTIVES:

T o study the effect of theraband exercise and throwing velocity among cricket players.

To study the effect of plyometric exercise and thwoing velocity among cricket players.

To compare he effect of theraband exercise and plyometric exercise and throwing velocity among cricket players.

HYPOTHESIS

HYPOTHESIS

NULL HYPOTHESIS:

There is no significant differenc e between the effect of theraband exercise and plyometric exercise and throwing velocity among cricket players.

ALTERNATE HYPOTHESIS:

There is significant difference between the effect of theraband exercise and plyometric exercise and throwing velocity among cricket players.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Shoulder problems in the overhead and throwing athlete can result in rotator cuff tendinitis. Biomechanically , there is a delicate balance between mobility and stability of the shoulder complex. Repetitive overhead stressful motion can lead to overuse tendinitis subtle instability, labral changes , and eventual fiber failure of the rotator cuff. Secondary impingement symptoms are present.

SHOULDER JOINT:

Shoulder joint is a most mobile joint in the body the shoulder is structurally insecure. The ball shaped humeral head rotates and glides on a shallow scapular cuff. A limited amount of passive stability provided by the glenoid labrum which slightly deepens scapular cuff and by ligaments reinforcing the capsule on its superior and anterior surface.

The most flexible joint in the entire human body our shoulder joint formed by the union6 of the humerus scapula and clavicle commonly thought of as a single joint the shoulder is actually made up of two separate joint the glenohumeral and acromioclavicular joints. This two joint work together to allow the arm both circumduct in a large circle and to rotate around its axis at the shoulder.

The shoulder is a muscle dependent joints as it lacks strong ligaments the primary stabilizers of the shoulder include the biceps brachii on the anterior side of the arm and tendons of the rotator cuff ;Which are fused to all side of the capsule except the inferior margin.

The shoulder joint has a very loose joint capsule known as the articular capsule of the humerus and this can sometimes allow the shoulder to dislocate. The long head of the biceps brachii muscle travel inside the capsule from its attachment to the supraglenoid tubercle of the scapula. Because the tendon of the long head of the biceps brachii is inside the capsule it requires a tendon sheath to minimize friction.

BIOMECHANISM OF SHOULDER JOINT:

The human shoulder is most mobile joint in the body. This mobility provide the upper extremity with tremendous range of motion such as a adduction, abduction flexion extension internal rotation external rotation and three sixty degree circumduction in the sagittal plane. Further more allow for scapular protraction retraction elevation and depression. This wide range motion also makes the shoulder joint unstable. This instability is compensated for by rotator cuff muscles tendons ligaments and the glenoid labrum.

The majority of data on over head throwing athletes relates to baseball pitching. This activity represents the extreme end of the spectrum of demands placed an athlete shoulder.however it has much to teach us about shoulder function. Enormous torques are generated about the shoulder during a baseball throw. The pitching arm has approximately four times more kinetic energy then the leg during a kick. This action of throwing places large demands on the glenohumeral and scapular musculature in accelerating and probably more importantly in decelerating the extremity. Shown the subscapularis contributes 53 percent of the cuff movement.

During acceleration of delivery high activity in pectoralis major serratus anterior latissimus dorsi and subscapularis internally rotates the shoulder in concentric fashion as demonstrated on electro myographic analysis . in the fallow through phase the shoulder girdle muscle function decelerate the extremity. The rotator cuff muscles contracte to

Kommi and Hakkinen, 1988

They had stated that a particular spe velocity description of movement is expected.[22]

Mcnair & Marshall 1999

They suggested that training techniques that simulate the velocity & acceleration profiles that replicate the desired functional performance may optimize adaptation to the task.

Exercise to increase throwing velocity:

They are

- Theraband exercise.
- Plyometric exercise.
- Resisted exercise using weights.

Theraband exercise:

Kenneth A jurist et al.,2002

He had stated that theraband helps to improve the muscle srength and improve throwing

Ohio et.al 2005

He had stated theraband exercise is a revolutionary replacement to traditional static stretching devices. When used with dynamic contract-relax stretches, it helps to improve flexibility and and muscle strength.

stabilize the humeral head and the pectoralis major latissimus dorsi serratus anterior biceps and deltoid all contract to decelerate the arm. The latissimus plays an major role in controlling deceleration and diminishing the eccentric over load on supraspinatus tendon.

MUSCLE WEAKNESS

The muscle weakness there was frequent history of muscle tear and DOMES in cricket players. compare the range of motion and shoulder strength which were correlated for upper limb function, the rotator cuff muscle injury would lead to decrease in muscle power. EMG analysis on throwing had showed that rotator cuff and deltoid muscle action that weakness of these muscle would lead to injury while throwing among cricket players.

EXERCISE TO USING THROWING VELOCITY

Theraband exercise helps to improve throwing velocity the muscle was simply defined as ability to produce muscle force strength is often divided in to muscular strength muscular endurance.

Plyometric exercise refer to activity that enables a muscle to reach maximal force in shortest possible time.plyometric training use the acceleration and deceleration body weight as the overload in dynamic activity.

Hill et al., 1938

He had described that an hyperbolic relationship between force and velocity for isolated muscles.

Lynn millar A.,1998

He stated that muscle strength was defined simply as " the ability to produce muscle force" muscular strength is often divided in to muscular strength and muscular endurance. Muscular endurance was the ability of a muscle to contract repeatedly or continuously. Strength was the amount of force produced for one contraction.

Corolyn kishner.

He stated muscle strength was a broad term that refers to the ability to contractile tissue to produce tension and a resultant force based on the demands placed upon the muscle. More specifically, muscle strength was the greatest. measurable force that can be exerted by a muscle group to over come resistance during a single, maximum effort.(7

Yuri Verkhoshansky

He had stated that plyometrics is the term applied to exercise that has their roots in soviet training methods. This training using upper body plyometrics increases strength was originally known as 'shock' training.(40)

WILSON et al, 1993

He had stated that plyometrics exercise refer to activity that enables a muscle to reach maximal force in shortest possible time. Plyometrics training uses the acceleration and deceleration body weigth as the overload in dynamic activities.(38)

Bosco et.al 1982

He had stated that plyometeric exercise were performed at high velocity over short time frames and promote the ability of the stretch-shorten cycle by enhancing of the neuromuscular system.[5]

Maria zuluaga, christopher briggs

He had stated that Ploymetric exercise for the legs, trunk and the arms were valuable to develop strength, power, rhythm and confidence.[24]

Jenkins, thackaberry and killan 1984

They had stated that plyometrics is a form of training that attempts to combine the speed of movement with strength.

Carter .N.D jenkinson.T.R.1985

He had stated that plyometrics increases joint proprioception by stimulating the muscle spindle and the GTO and also the type 1,2and3 mechanorecptor.[8]

Grey Merrit, 2005

He had stated that Plyometrics is a method of training for explosiveness or power (combination of speed and speed and strength) that is typically performed for a specific sport.[17]

Mc Ardle and katch,2001

They had stated that maximum force that a muscle can develop is attained during rapid eccentric contraction; however it should be realized that muscle seldom performs one of contracting in isolation during athletic movement.

UPPER BODY PLYOMETRICS

Bill pearl,1983

He had stated that the plyometrics provide an overload to the musculature in a way which is different from weights training. Plyometrics improves upper arm speed and strength.[3]

Tom Seabourne phD,2000

He stated that plyometrics for arm power will increase upper body strength and throwing velocity.[32]

Raphael Brandon,1994

He stated that medicine ball exercises- a form of plyometrics training was found to improve strength.

Goodall, John Casey,1998

He had stated that while throwing the ball, tremendous amount of twisting force called torque into the area of shoulders called rotator cuff. Plyometrics using the medicine ball improves the shoulder strength in players.[16]

Doug Reese

He had stated that medicine Ball toss is another means of increasing upper body strength popular with throwers.[15]

Donald chu, 1978

He had stated that mechanism of upper body plyometrics comprises of stretch-shortening cycle. The muscle and tendons are first lengthened with an eccentric load- pulling back your arm to throw a ball which may increase the subsequent concentric force producyion and release of elastic energy – as the arm accelerates forwards to release the ball.[14]

Jospeh M, Wepeha

He had stated that the performance of many athletes would benefit from implementing upper body plyometric training into their routine. This article was meant to Introduce upper body plyometric exercise that can be incorporated into the program of any person for whom upper body power explosiveness is required.[19]

RESISTANCE EERCISE USING WEIGHTS

Sullivan ,2004

He had stated that resistance training programs used progressive and non-progressive isotonic upper body resistance training protocols to determine the changes of velocity among college men non-baseball players. Although this investigator found a significant increase in throwing velocity with the isotonic upper body exercise protocols, traditionally, high school baseball training utilizes upper body free weight exercises and shoulder dumbbell exercises in an isotonic resisted protocol.[31]

Measurement tool:

Dr Frank Spaniol,(2004):

He had stated that velocity can also be assesed by stop watch by assesing speed and distance.[13]

Teger et.al(1999):

He had stated that stopwatch can be a reliable method to assess throwing velocity in baseball pitcher.[32]

Alwin and thomas(2001):

He had stated that stop watch was used to find the velocity and it is and easy and simple way to find the velocity.

METHODOLOGY

METHODOLOGY

STUDY DESIGN:

Pre test and post test experimental study design.

SAMPLE SIZE

20 members

SAMPLING METHOD;

Simple random sampling

SAMPLE POPULATION:

College cricket players

Group A: 10 subjects (theraband exercise).

Group B: 10 subjects (plyometric exercise).

STUDY SETUP:

Nehru school ground chennai.

STUDY DURATION

3weeks

VARIABLES

INDEPENDENT VARIABLES

Plyometric

Theraband exercise

DEPENDENT VARIABLES

Throwing velocity test

Over head back toss

CRITERIA FOR SELECTION

INCLUSION CRITERIA:

- Male
- College cricket players
- Age (18 years to 25 years)

EXCLUSION CRITERIA:

- Recent history of upper limb spine fracture.
- Previous history of shoulder dislocation, sublaxation.
- Joint stiffness.
- Tennis elbow.
- Previous history of rotator cuff tear.
- Biceps tendinitis.
- Previous history of nerve injury.
- Previous history of injury to middle index and thumb.
- Neck pain.

Present history of injuries around shoulder and scapula.

OUTCOME MEASURE

THROWING VELOCITY TEST:

- Throwing velocity is accessed over a distance of 56 metres, distance between the player stands and reach stands.
- After an adequate general warmup and stretch , they are instructed to throw 3 times, highest of i.e recognized
- At the release of ball, stopwatch is started and time taken is noted which is further calculated and velcoty is found.

PROCEDURE

PROCEDURE

PLYOMETRIC PUSH-UP:

- Plyometric push –ups are complete from the kneeling position, with the knees and feet remaining contact with floor.
- Subject is asked to perform their trunk vertical position along their arms in relaxed and hanging position at their sides.
- From this position subjects are asked to fall forward and extending their arms forward with slight elbow flexion, in preparation for contact.
- At contact the subject gradually absorb the force of the fall by further flexing the elbows and gradually stops the movement with the chest nearly touching the floor.
- Immediately after stopping the downward motion, the subject is asked to reserve the action by rapidly extending his arms and propelling his trunk back to the starting position.
- The plyometric push-ups is repeated every 4 seconds until the assigned repetition are completed.

OVERHEAD THROWS:

- Partner Stand with one feet in front (staggered stance with knees slightly bent).
- Medicine ball back is taken back behind head and throw ball forward forcefully as far as possible.
- He is asked to repeat according to prescribed repetitions, keep the time pulling the ball back and starting the throw(transition phase) to a minimum.
- Session-2 session /week.
- Repetitions-10-20 repetitions/set.

SIDE THROW:

- Subject is asked to start with feet hip width and place left foot approximately one foot in front of the right foot.
- Then ask the subject to hold medicine ball with both hand and arms slightly bent.
- Then ask the subject to swing it over to the right hip and forcefully underhand toss ball forward to the partner.
- Ask the subject to keep the stomach in proper position so as to maximize proper usage of muscles.
- Then ask the subject to catch ball on the bounce from partner and repeat.
- Sessions 2-3 sessions/week.
- Repetitions 10-20 repetition/set.
- 2-3 sets per session.

OVERHEAD BACK TOSS:

- Subject is asked to stand with feet slightly under then hip width and have a partner to stand approximately 10-15 yards behind .
- Then ask the subject to grasp ball and lower body into a semi squat position extend the body suddenly and throwing medicine ball up and over the body.
- Then ask the subject to catch the ball on the bounce from partner and repeat according to prescribed repetition.
- Sessions 2-3 sessions/week.
- Repetition 10-20 repetition/set.
- 2-3 sets per sessions.

SLAMS:

- Subject is asked to stand with feet parallel shoulder width and knees slightly bent.
- Then subject is asked to take medicine ball back behind and forcefully throw ball down on the ground as hard as possible.
- Then ask the subject to catch the ball on the bounce from the ground and repeat according to prescribed repetition.
- Sessions 2-3 sessions/week.
- Repetitions 10-20 repetitions/set.
- 2-3 sets per session.

FIGURE-1

OVER HEAD THROW

FIGURE -2

OVER HEAD BACK TOSS

THERABAND EXERCISE:

SHOULDER FLEXION:

- With the theraband still tied to the Fixed surface . Subject is asked to stand opposite to the.fixed surface.

- Then subject is asked to grip the theraband in hand beginning with elbow straight at subjects side and slightly behind subject , then subject is asked to push forward until arm is extended straight in front of subject.
- Repeat this exercise in 3sets of 10, 3 times per day.

SHOULDER EXTENSION:

- With the theraband still tied to fixed surface completely turn towards the fixed surface.
- Then subject is asked to grip the theraband in subjects hand and with elbow straight, pull towards to the end of subjects range of motion.
- Repeat this exercise in 3 sets of10, 3 times per day

SHOULDER ABDUCTION:

- Subject is asked to stand still on the theraband, and arm straight at side, and ask the patient to turn subjects palm so that it is facing up.
- Then lift subjects arm out to the side as far as subjects can go without pain. Then return back to starting position.
- Repeat this exercise in 3 sets of 10, 3 times per day.

SHOULDER EXTERNAL ROTATORS:

- With the theraband still tied to the fixed surface to the opposite side and ask the subject to turn the body.
- Then the subject is asked to grip the theraband in hand, and with elbow bent at subjects side the entire time, rotate forearm and hand away from subjects body.
- Repeat this exercise in 3 sets of 10, 3 times per day.

SHOULDER INTERNAL ROTATORS:

- With the theraband still tied to the fixed surface ,ask the subject to turn subjects body so that arm is closest to the fixed surface.
- Then ask the subject to grip the theraband in hand, and with elbow bent at subjects side the entire time, rotate forearm and hand in towards subjects body.
- Repeat this exercise in 3 sets of 10, 3 times per day.

EMPTY CAN EXERCISE:

- Subject is asked to stand still on the theraband, and arm straight at subjects side, turn palm so that subjects thumb is pointing down, lift arm diagonally in front, as high as subjects can go without pain. Slowly return arm back to the starting position.
- Repeat this exercise in 3 sets of 10, 3 times per day.

PERISCAPULAR EXRECISES:

- Subject is asked to wrap the theraband around a pole or something equally as sturdy, then grip one end of the theraband in each hand.
- Then subjects is aske to begin with arms straight in front then slowly pull backwards while bending elbows and ask the patient to make sure to squeeze shoulder blades together. Then Return subjects arms back to the starting position.
- Repeat this exercise in 3 sets of 10, 3 times per day.

ELBOW FLEXION:

- Subject is asked to place the theraband under feet and pull toward shoulders.
- Repeat this exercise in 3 sets of 10, 3 times per day.

ELBOW EXTENSION:

- Subject is asked to place the theraband under the arms of a chair and push up toward the ceiling.
- Repeat this exercise in 3 sets of 10, 3 times per day.

WARM UP/ COOL DOWN PROCEDURE:

- All subjects underwent 11 minutes of warm up
- 5 minutes of static stretching of shoulder muscles
- 6 minutes of jogging prior to training.
- Ended in to cool down session of 7-8 minutes of jogging.

FIGURE-3

SHOULDER FLEXION EXERCISE:

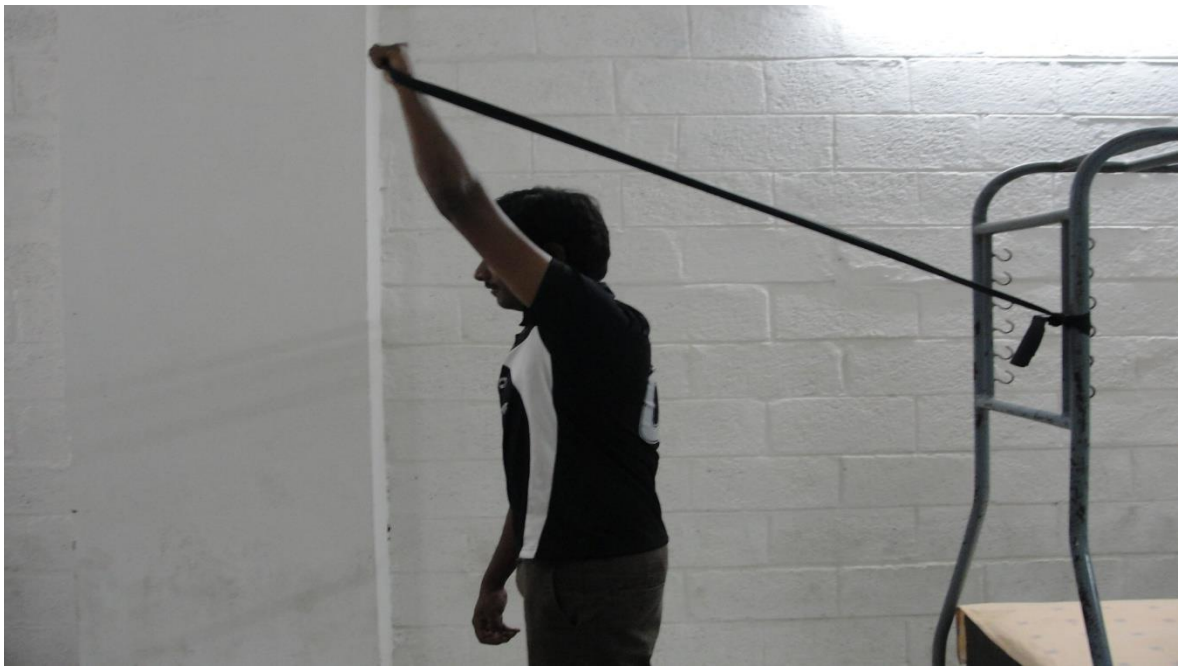
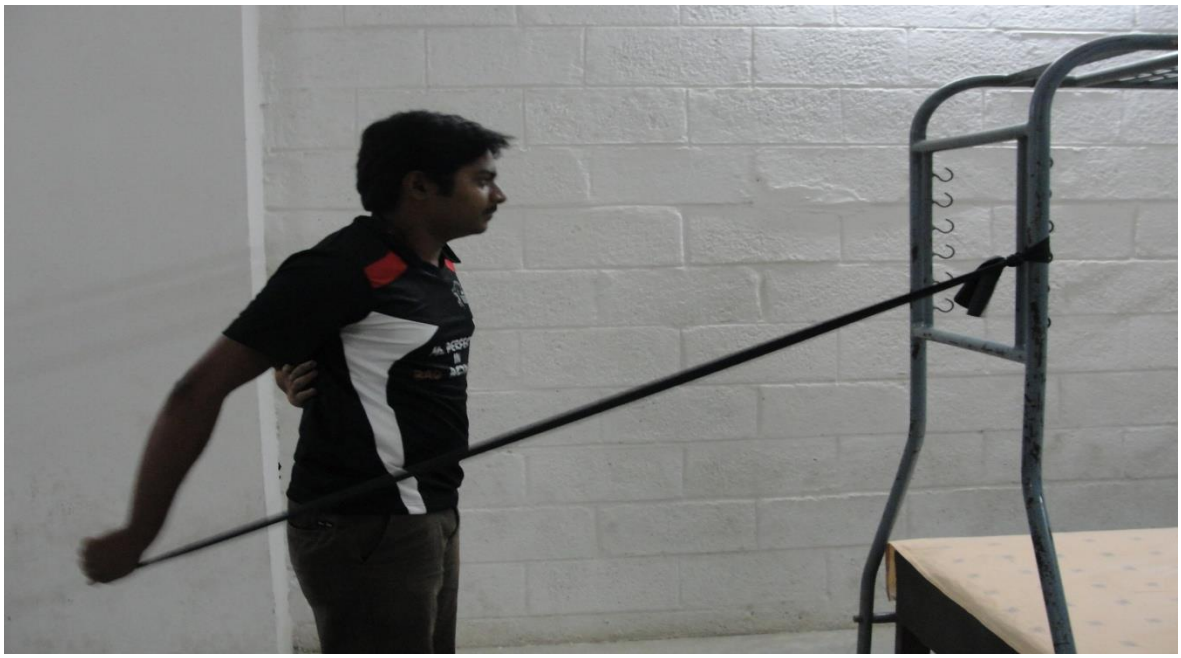


FIGURE-4

SHOULDER EXTENSION EXERCISE:



DATA ANALYSIS

DATA ANALYSIS

1) PAIRED 't' TEST:

$$S = \sqrt{\frac{\Sigma d^2 - (\bar{d})^2 \, x \, n}{n-1}}$$

$$t = \frac{\bar{d} \, x \, \sqrt{n}}{S}$$

n = Number of sample

$\bar{d}$ = Mean of Deviation

$\sum d^2$ = Sum of Squared Deviation

2) INDEPENDENT 't' TEST:

$$S = \sqrt{\frac{\Sigma(x_1 - \bar{x}_1)^2 + \Sigma(x_2 - \bar{x}_2)^2}{n_1 + n_2 - 2}}$$

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S} \sqrt{\frac{n_1 n_2}{n_1 + n_2}}$$

$\bar{X}_1$ = Mean of group A

$\bar{X}_2$ = Mean of group B

n_1 = Number of sample in group A

n_2 = Number of sample in group B

Level of significance is 5%

DATA PRESENTATION

PAIRED 'T' TEST

TABLE NO :1

	THERABAND GROUP	
	PRE-TEST	POST-TEST
MEAN VALUE	13.63	17.32
CALCULATED 't' VALUE	t = 9.99	
'p'VALUE AND ITS LEVEL OF SIGNIFICANCE	P<0.05(SIGNIFICANT)	

TABLE NO:2

	PLYOMETRIC GROUP	
	PRE-TEST	POST-TEST
MEAN VALUE	13.12	17.46
CALCULATED 't' VALUE	t = 9.59	
'p' VALUE AND ITS LEVEL OF SIGNIFICANCE	P<0.05(SIGNIFICANT)	

INDEPENDENT 'T'TEST:

TABLE NO:3

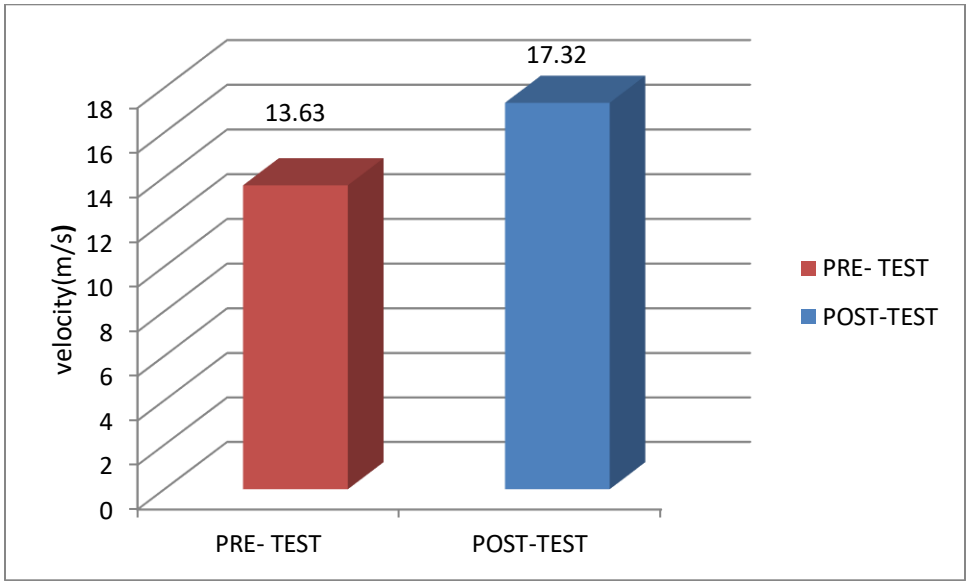
	PRE-TEST	
	GROUP A	GROUP B
MEAN VALUE	13.63	13.12
CALCULATED 't' VALUE	t = 0.948	
'p' VALUE AND ITS LEVEL OF SIGNIFICANCE	P>0.05(NOT SIGNIFICANT)	

TABLE NO:4

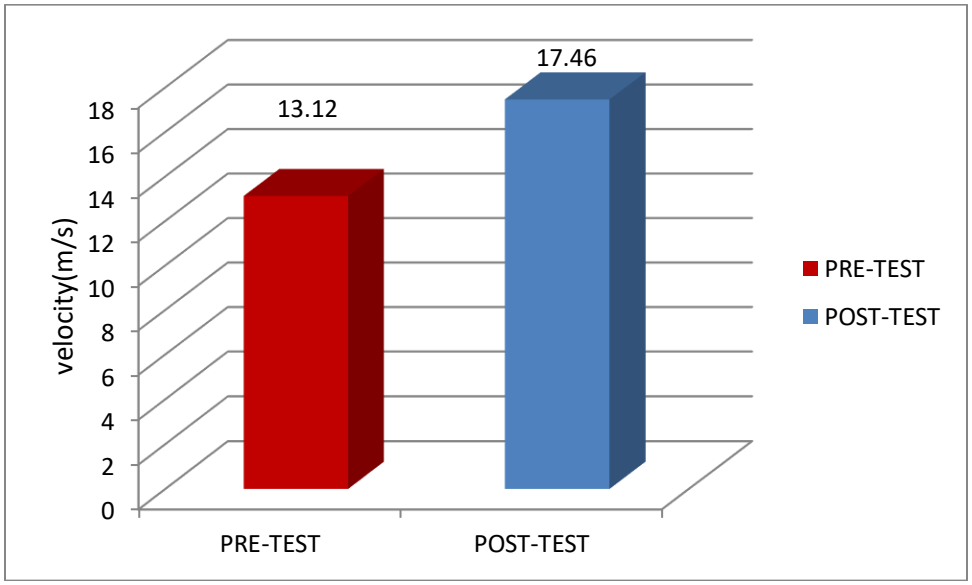
	POST-TEST	
	GROUP A	GROUP B
MEAN VALUE	17.32	19.46
CALCULATED 't' VALUE	t = 3.092	
'p' VALUE AND ITS LEVEL OF SIGNIFICANCE	P<0.05(SIGNIFICANT)	

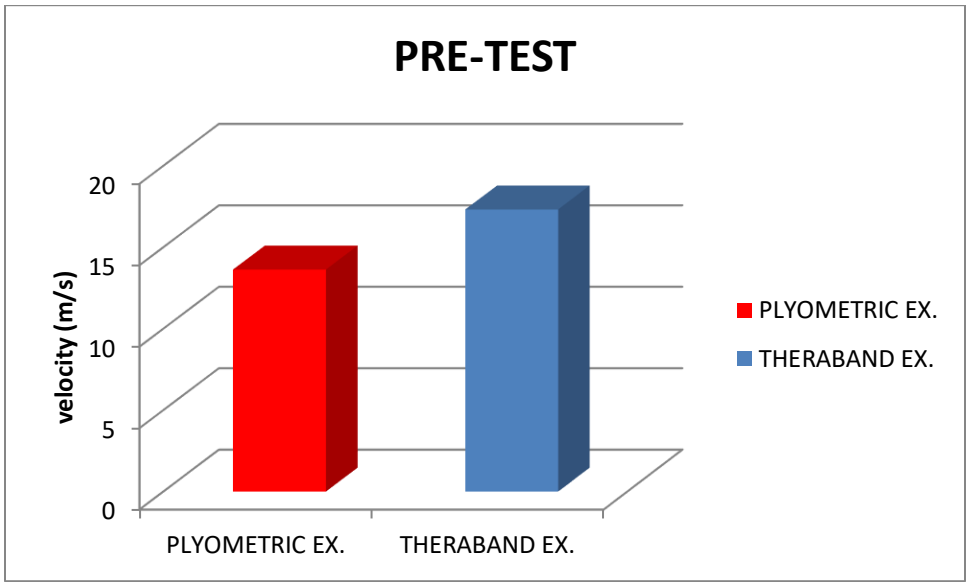
GRAPHICAL REPRESENTATION

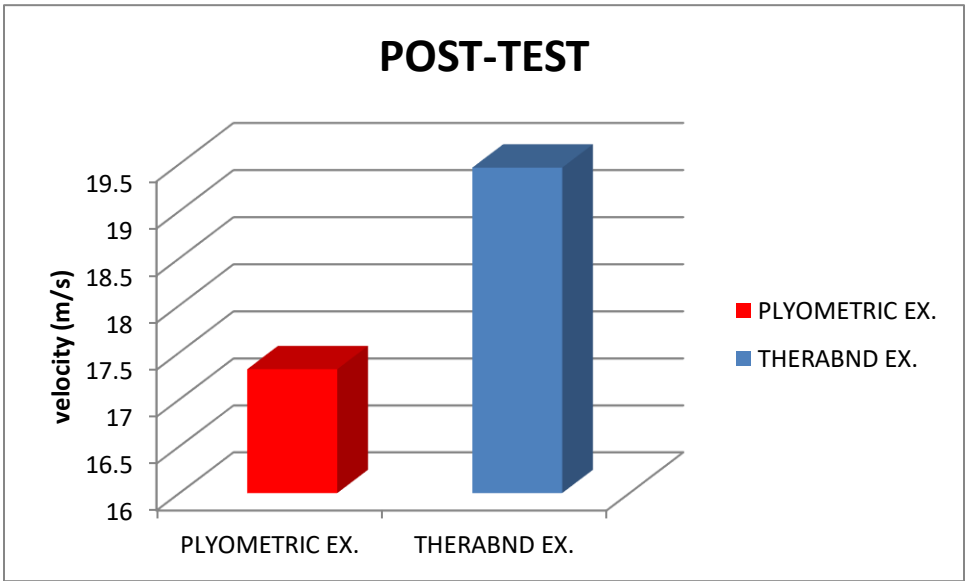
THERABAND GROUP



PLYOMETRIC GROUP




PRE-TEST
velocity (m/s)
20
15
10
5
0
PLYOMETRIC EX.
THERABAND EX.
PLYOMETRIC EX.
THERABAND EX.


POST-TEST
velocity (m/s)
19.5
19
18.5
18
17.5
17
16.5
16
PLYOMETRIC EX.
THERABND EX.
PLYOMETRIC EX.
THERABND EX.

RESULT

RESULT

RESULT OF PAIRED 'T' TEST:

THERABAND GROUP:

When pre test and post test values of theraband exercise group is analysed by paired 't' test the calculated 't' test value is 10.00.

For 9 degree of freedom at 5% level of significance the table 't' value was 2.262 calculated 't' value is greater than the table 't' value, the null hypothesis is rejected.

PLYOMETRIC GROUP:

When pre test and post test values of plyometric exercise group is analysed by paired 't' test the calculated 't' value is 9.59.

For 9 degree of freedom at 5% level of significance the table 't' value was 2.262 calculated 't' value is greater than the table 't' value , the null hypothesis is rejected.

RESULT OF INDEPENDENT ‘T’ TEST:

PRE TEST:

When pre test values of theraband exercise group and plyometric exercise group were analysed the calculated ‘t’ test value is 0.94

For 18 degree of freedom at 5% level of significance the table ‘t’ value was 2.101
calculated ‘t’ value is lesser than the table ‘t’ value, there is no significant difference in throwing velocity between two groups.

POST TEST:

When the post test values of theraband exercise group and plyometric exercise group is analysed the calculated ‘t’ value is 3.09.

For 18 degree of freedom at 5% level of significance the table ‘t’ value was 2.101 calculated ‘t’ value is greater than the table ‘t’ value , there is significant difference in throwing velocity between two groups and so null hypothesis is rejected .

DISSCUSSION

DISCUSSION

Muscle strength is vital to perform physical activities of daily living, requirement of strength Is more in cases of activities , so as to bring about a competitive performance.

This study was performed to compare the effect of theraband exercise and plyometric exercise on throwing velocity in collegiative cricket players. 20 cricketers were taken and divided into two group. Each consisting 10 members. One group was given theraband exercise and other group was given plyometric exercise for shoulder muscles on throwing velocity for a period of 3 weeks.

Stastistical analysis was done using paired 't' test and the independent 't' test. Analysis of result showed that theraband exercise improved the throwing velocity than plyometric exercise.

Ernie parker has stated that theraband helped to improve the muscle strength and improves throwing velocity in baseball players. The ability of body's muscle to generate force in a short period of time. When a heavy weight is lifted, it increases strength , size of muscle as well as strengthening connective tissue. This can help to avoid injuries and of course make stronger and healthier.

The athletes involved in throwing have an harmful effects of repetitive deceleration the arm and the key to longevity is to maintain muscular balance within the shoulder complex. In this study, plyometric exercise has showed a significant improvement on throwing velocity in cricket players.

Plyometric exercise is defined as quick powerful movement that involve a pre-stretch of a muscle just before its contraction. The pre stretch increases the exitability of neurological receptors enhancing reactivity of neuromuscular system.

Plyometric helps to improve the throwing velocity in baseball players and also helps in increasing shoulder muscle strength

CONCLUSION

CONCLUSION

Previous studies proved that plyometric exercise improves the throwing velocity. But this study proves theraband exercise helps to improve the throwing velocity in crick ters.plyometric helps to improve the throwing velocity in baseball players and also helps increasing shoulder muscle strength.

This might due the fact that the theraband exercise group was functionally more intensive in achieving outcome measure. From this study it could be conclude that theraband exercise improves throwing velocity than the plyometric exercise.

LIMITATIONS AND RECOMANDATIONS

LIMITATIONS AND RECOMANDATIONS

LIMITATION

- This study was done for short duration, longer duration of exercise program can be recommended.
- The study was conducted in the age group of 18 to 25, age more than 25 years can also be concluded.
- This study was conducted in collegiative cricketers, for better results professional cricketers can be taken.
- In this study only upper body muscles were concentrated, other part of body muscle may also be concentrated in future studies.
- Throwing velocity measurement was used in stop watch, various other outcome like hand held pro speed professional radar gun can be used.
- This study was done only on two experimental groups, so in further studies control group can also be included.

RECOMDATION

- Further studies can be done with large sample size.
- Follow up studies can be performed to understand about long term effects of the eexercise can use more outcome measures.

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APPENDIX

APPENDIX:

CONSENT LETTER

I Miss _____ age _____ freely and voluntarily agree to participate in the study' **TO COMPARE THE EFFECT OF THERABAND EXERCISE AND PLYOMETRIC EXERCISE ON THROWING VELOCITY AMONG COLLEGIATIVE CRICKET PLAYERS'**.The observe had explained about the procedure and the benefits and risk that would occur during the study and all the information given by me will be kept strictly confidential and used for research purpose

Place:

SIGNATURE

MASTER CHART

TABLE – 1

THERABAND GROUP

S.NO	PRE TEST VALUE	POST TEST VALUE
01	13.63	17.32
02	12	18.3
03	11.5	16.5
04	18.5	10
05	17	19.2
06	22	20.3
07	26	23
08	27	17
09	19.5	19.6
10	20	20.5

MASTER CHART

TABLE-2

PLYOMETRIC GROUP

S.NO	PRE TEST VALUE	POST TEST VALUE
01	13.2	17.46
02	19.3	20.3
03	11	15
04	15.5	17.5
05	12	14.3
06	23.2	16.5
07	19.3	24
08	23	18.5
09	18.5	23
10	17.2	26.5